E. W. HOWELL.

WORK BENCH.

APPLICATION FILED DEC. 8, 1916.

1,235,568.

Patented Aug. 7, 1917.

3 SHEETS—SHEET 1.

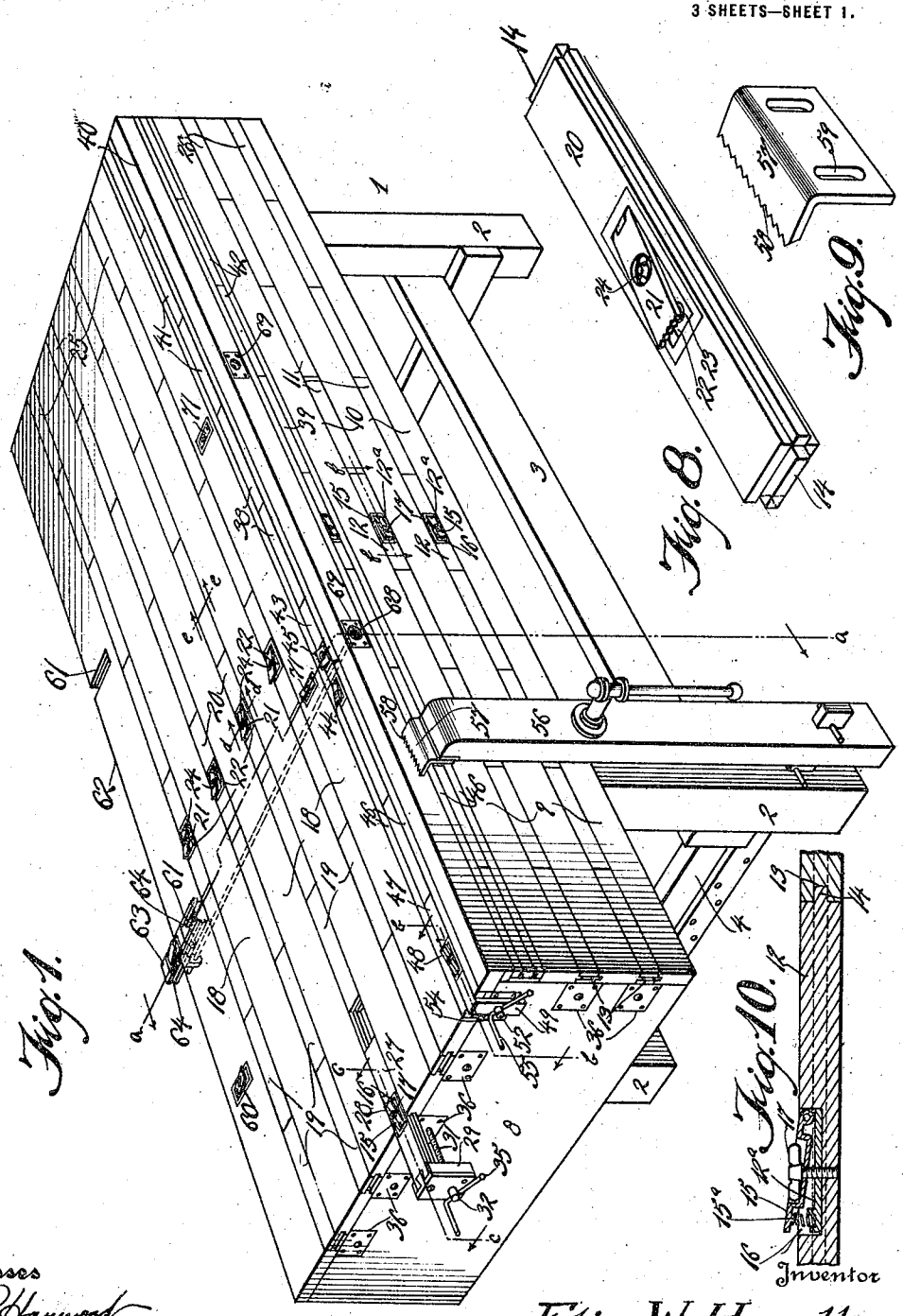


Fig. 1.

Fig. 8.

Fig. 9.

Fig. 10.

Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

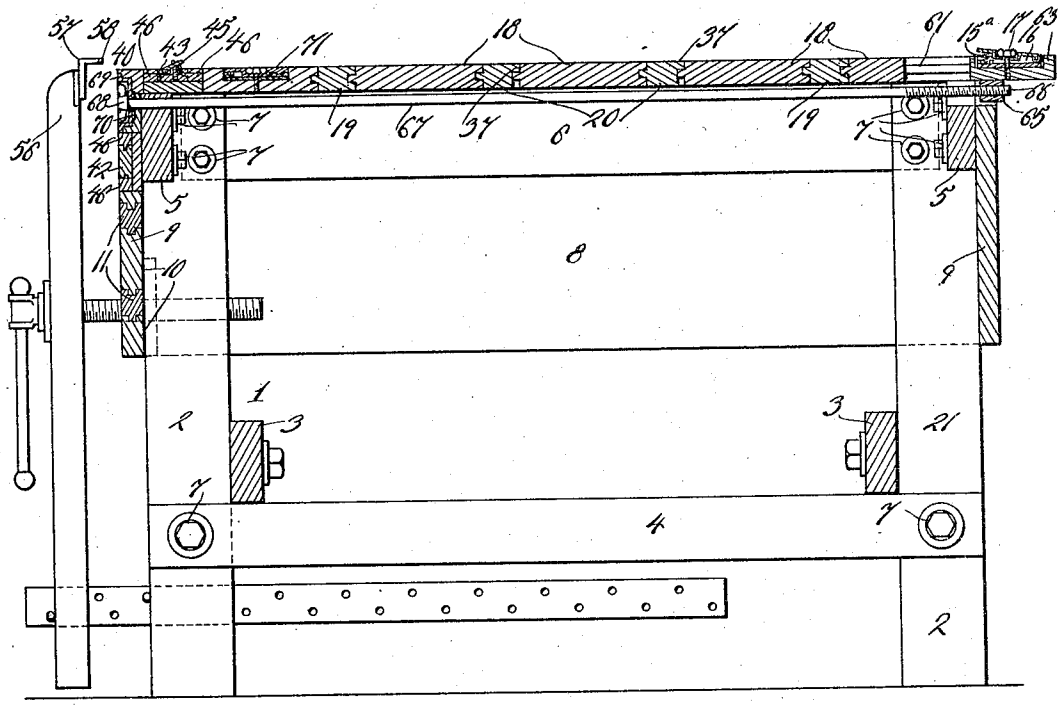
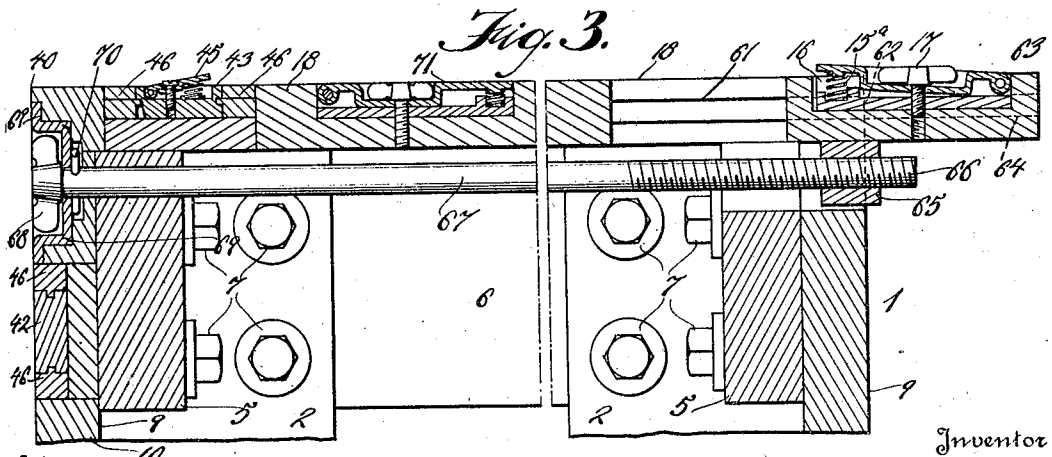


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

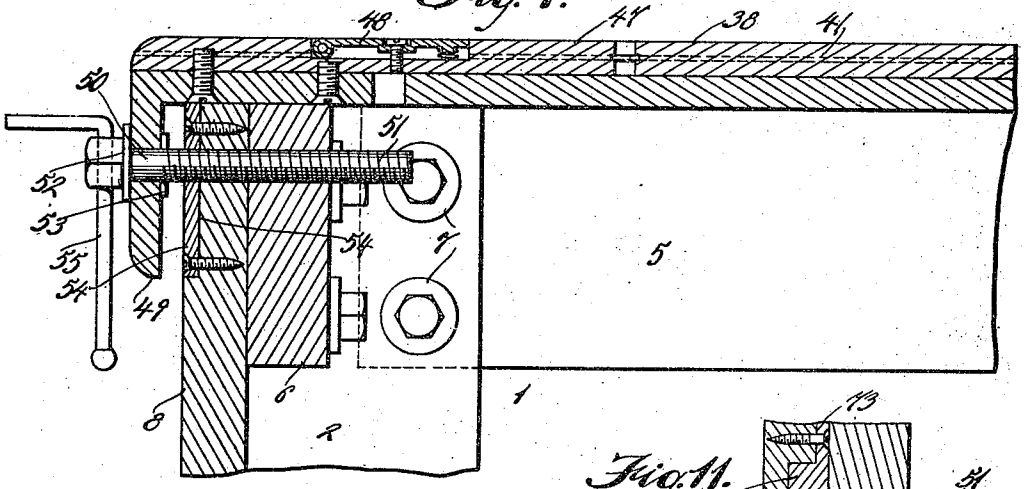


Fig. 11.

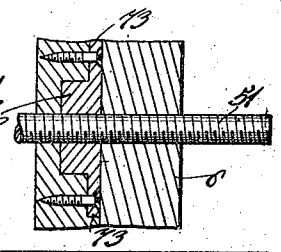


Fig. 5.

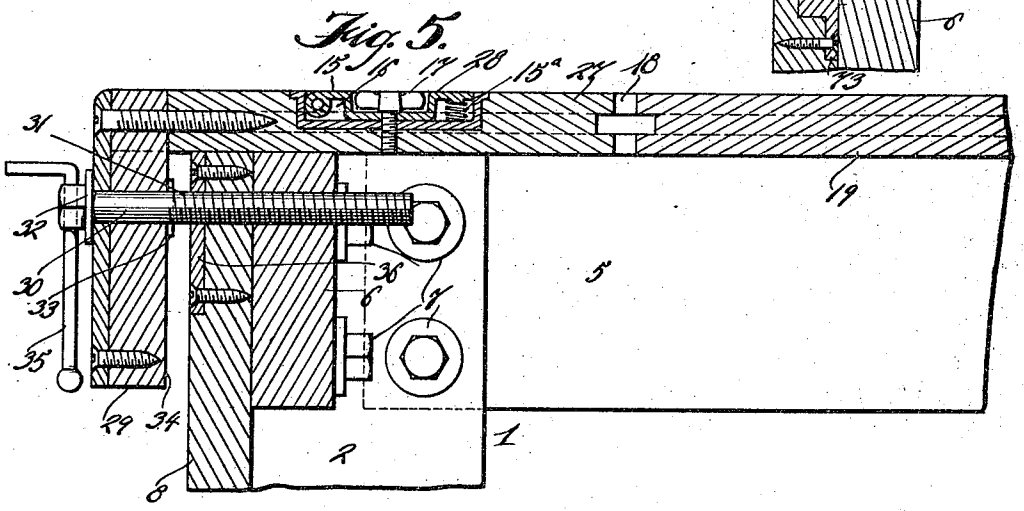


Fig. 6.

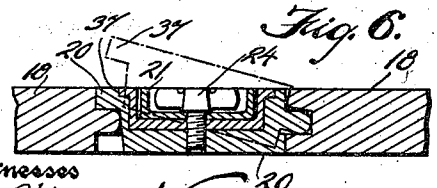
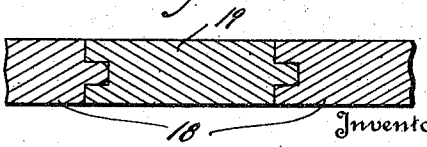


Fig. 7.



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UNITED STATES PATENT OFFICE.

ELIAS W. HOWELL, OF CAMDEN, NEW JERSEY.

WORK-BENCH.

1,235,568. Specification of Letters Patent. Patented Aug. 7, 1917.

Application filed December 8, 1916. Serial No. 135,895.

To all whom it may concern:

Be it known that I, ELIAS W. HOWELL, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Work-Benches, of which the following is a specification.

My invention consists of an improved work bench or supporting structure including adjustable clamping means which renders it especially useful for carpenters and metal workers. However, it can be used advantageously for any purpose where it is desired to firmly clamp and support articles of various types.

One object of my invention is to provide a supporting structure including clamping means which can be quickly and easily operated to positively secure pieces of wood, metal, or other articles so that they can be planed, sawed, or otherwise operated upon by one or more persons.

Another object is to so form my invention that it will be of simple construction and can be manufactured and sold at reasonably low cost.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a perspective view representing my invention constructed in the form of a carpenter's or workman's bench.

Fig. 2 is a slightly enlarged section taken on the line *a—a* of Fig. 1.

Fig. 3 is a fragmentary section on a larger scale than shown in Fig. 2 and having a portion broken away in order to show in detail certain of the elements shown in the upper portion of Fig. 2.

Fig. 4 is an enlarged fragmentary section taken on the line *b—b* of Fig. 1.

Fig. 5 is an enlarged fragmentary section taken on the line *c—c* of Fig. 1.

Fig. 6 is an enlarged transverse section taken on the line *d—d* of Fig. 1.

Fig. 7 is an enlarged section taken on the the line *e—e* of Fig. 1.

Fig. 8 is a perspective view of a readily removable clamping section which I employ.

Fig. 9 is a perspective view of a toothed jaw which I use in connection with a vise shown in Fig. 1.

Fig. 10 is an enlarged sectional view taken on the line *f—f* of Fig. 1.

Fig. 11 is a fragmentary section showing a modified form of adjusting means which I may employ.

Referring to the drawings, 1 is a supporting frame having legs 2, which are connected by longitudinal beams 3 and transverse beams 4 at the bottom, and longitudinal beams 5 and transverse beams 6 at the top. These legs and beams are preferably secured by bolts 7 so as to form a rigid supporting frame.

To the outside of the legs 2 and upper beams 5 and 6, are secured end boards 8 and side boards 9. One of the side boards 9, which as illustrated represents the front of the bench, comprises a plurality of continuous strips 10 which are tongued and grooved in the ordinary manner of floor boards. These boards are secured to the front legs 2 and are spaced apart to receive two series of slidable sections 11. These sections, with the exception of clamp-carrying sections 12, are tongued and grooved on opposite sides to register with the tongue and grooves of the adjacent strips between which they slide, so that the sections 11 will move longitudinally between the strips 10 but cannot be removed laterally. In other words, in order to remove these sections it is necessary to slide them to one end of the bench so as to pull them longitudinally out of the grooves.

The ends of the sections 11 are grooved as shown at 13 in Fig. 10 to receive end tenons 14 which are located at the opposite ends of the sections 12. The sections 12 are provided with clamps 12^a including a hinged clamping plate 15. These clamps when not in use, are movable into recesses 16 by means of adjusting screws 17, so that their outer surface is flush with the outer surface of said sections.

Each of the plates 15 is movable outwardly by a spring 15^a when the adjusting screw 17 is loosened (see Fig. 10). These sections 12 are interchangeable with any of the sections 11 and are movable relatively toward each other between the strips 10 by clamp screws as will hereinafter be set forth.

The top of the bench comprises a plurality of boards or strips 18 which are secured to the beams 6 by any suitable means and are spaced apart. These boards 18 are tongued

and grooved in a manner similar to the strips 10, and have slidable between them, a plurality of series of slidable sections 19, said sections 19 being similar to the sections 11 above described.

Interposed between the ends of the sections 19, are sections 20 which are similar to the sections 12 and are provided with hinged clamping plates 21 which are designed when not in use to fit within recesses 22, each of said clamping plates being movable outwardly by a coiled spring 23 and movable inwardly by an adjusting screw 24.

The sections 11 and the sections 19 serve as filling pieces. Sections 25 and 26 are secured to the frame adjacent one end of the bench and act as thrust members to limit the sliding movement of said sections in one direction.

A section 27 is provided with a clamp 28 similar to the clamp 12ª, and has a depending block 29 through which passes a plain portion 30 of a clamping screw 31. This screw is permitted to turn within said block, but longitudinal movement relative thereto is prevented by means of a head 32 on said clamping screw, and a pin 33 which is projected therethrough and engages the inner surface 34 of the block 29, said head 32 engaging the outer surface of said block.

A handle 35 slidably engages the head 32 and facilitates the turning of said screw 31. A plate 36 constitutes a nut and has a threaded opening which is engaged by the screw 31. This plate 36 is secured within the end board as clearly shown in Fig. 5, and it will be understood that a turning of said screw effects a longitudinal sliding movement of the section 27 toward or from the other sections which are in line with said section 27.

It will be noted that there is a plate 36 directly below each of the spaces between the boards 18 and also there is a plate 36 directly adjacent the spaces between the strips 10 in the front of the bench, so that said section 27 may engage between any of the spaces provided by the boards 18 or the strips 10, and in each case the clamping screw 31 will engage the tapped opening of a respective plate 36.

Any of the sections 12 or 20 may be removed by giving them an upward tilting movement as shown in dot-and-dash lines in Fig. 6 after adjacent filling pieces have been moved longitudinally a sufficient distance to free the end tenons of said sections, since it will be noted that instead of providing the regular groove on one of the edges of the sections 12 or 20, as is provided in the sections 11 or 19, said edge of either of the sections 12 and 20 merely has a flange 37 (see Fig. 6), so that it may be raised and readily removed. This construction prevents the necessity of moving all of the sections out of the spaces in order to remove one of the clamp sections 12 or 20, since it will be noted that it is often desirable to move said clamp sections to different positions in order to suit and bind different sized objects.

The clamp section 27 has its hinged clamp plate pointing in a direction opposite to the hinged clamp plates of the sections 12 and 20 as illustrated, so that a piece of wood or other article may be bound between the clamp on the section 27 and clamps on any of the sections 12 or 20.

All of said sections as above mentioned may be made of wood, but I have also illustrated two series of metallic sections 38 and 39 which are arranged respectively on the top and front side of the bench adjacent the edge 40 thereof. These series 38 and 39 comprise filling sections 41 and 42 respectively which are similar in all respects except size, with the sections 19 and 11 respectively.

I have also illustrated a clamping section 43 in said series 38 and have provided the same with clamps 44 and 45. The clamp 44 extends in the direction of said series, while the clamp 45 extends transversely.

The sections 41 and 42 are in tongue and groove connection with inserted tongue and grooved rails 46 which are spaced apart and secured to the top and front of the bench. An active slidable section 47 is provided with a clamp 48 which is substantially the same as the clamp 12ª, and has a depending portion 49 designed to receive a plain portion 50 of a clamping screw 51. This depending portion 49 is confined between a head 52 and a pin 53 on said clamping screw. A plate 54 forms a nut and has a threaded opening in which the clamping screw 51 turns.

A handle 55 is slidably secured within the head 52 and serves to facilitate the turning of the screw 51. It will be noted that with this construction that the section 47 receives a longitudinal movement between the rails 46 to move its clamp toward or from the clamp 44. The threaded opening in the plate 54 is so located with respect to the two series 38 and 39 of movable sections that the section 47 may be moved to actuate either of said series 38 or 39, so that said clamping screw 51 may always operate within the plate 54.

I also provide a vise 56 and a jaw 57 having a toothed edge 58, said jaw being substantially L-shape and having bolt slots 59 so as to permit it to be adjustably secured to the top of said vise 56. I also preferably provide a clamp 60 on the top of the bench opposite the jaw 57 so that material may be clamped transversely of the bench by the movement of the vise 56, said material being held between the clamp 60 and said jaw 57. I also provide grooved recesses 61 which extend inwardly from the

edge 62 of the bench and have blocks 63 provided with lateral ribs 64 which slide within the grooves of said recesses 61.

Each of the blocks 63 carries a clamp of similar construction to the clamp 12ª and has a depending nut 65 which is engaged by the threaded end 66 of a transversely extending bar 67, the latter extending entirely across the bench and having a winged head 68 which engages the outer surfaces of either of two recessed plates 69 which are set in the front of the bench as clearly shown in Figs. 1 and 3.

A pin 70 extends through the bar 67 and engages the rear surface of said plates 69 to prevent longitudinal movement of the bar 67 when turned; however, it will be noted that a turning movement of said bar causes a relative sliding movement of the block 63 within either of the recesses 61, and I preferably mount clamps 71 on the upper surface of the table in direct alinement with the path of movement of the block 63 within either of the recesses 61.

I have illustrated two recesses 61, but it will be noted that any number of these recesses and any number of plates 69 may be provided according to the length of the bench. With this construction it will be noted that a piece of wood or other article may be clamped between the clamps 71 and the clamp which is carried by the block 63.

While I have described and illustrated a specific number of the slidable sections having pivoted clamping plates therein, it will be noted that a greater or smaller number of these sections may be employed and interchanged at will.

Furthermore, the specific form of section clamps which I have illustrated and described may be varied, but I prefer to use a clamp having a portion which may be movable beyond the surface of the bench when needed for use and which can be moved either flush or below the surface of the bench when not in use so as not to injure or interfere with the manipulation of articles over the bench.

It will be noted from Fig. 1 that the clamp 45 on the section 43 may also be used in connection with the clamp on the block 63 to secure an article to the supporting structure.

In Fig. 11, instead of having a flat plate as shown at 36 and 54 in the other figures of said drawing, I employ a nut 72 which has flanges or ears 73 which are secured in the recesses formed in the inner surface of the end board 8. This gives a long screw-threaded contact portion for the clamp screw and is desirable when my invention is used for heavy work. In all other respects the elements illustrated in Fig. 11 are similar to those illustrated in Fig. 5, and I have given the same like reference numerals.

While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A work bench having means providing a slide-way, a series of sections slidable within the slide-way, independently movable clamping members on certain of said sections, said clamping members being movable beyond the outer surface of the sections, and means on said supporting structure for sliding certain of said sections toward and from each other, substantially as described.

2. A supporting structure having means providing a slide-way, and a series of slidable sections movable within said slide-way, said sections having tongue and groove connection one with the other and with the means forming said slide-way, certain of said sections having clamping members, and means for moving certain of said sections toward or from each other, substantially as described.

3. A work bench having means providing a slide-way, and a series of slidable sections movable within said slide-way, said sections having tongue and groove connection with said means and designed to abut each other, certain of said sections having clamping members, a member secured to said supporting structure and having a threaded opening, a clamping screw supported by one of said sections and designed to engage the threaded opening in said member whereby the turning of said screw effects a relative movement of said latter section with respect to said other sections, said sections being substantially flush with the outer surface of said bench, substantially as described.

4. A work bench having means providing a plurality of slide-ways, a series of sections slidably mounted in said slide-ways, said sections having tongue and groove connection with said means, independently movable clamping members, said clamping members being movable beyond the outer surface of said sections, and means for moving certain of said sections of each series toward or from each other, substantially as described.

5. A supporting structure having means providing a slide-way, and a series of slidable sections movable within said slide-way, said sections having tongue and groove connection one with the other and with the

means forming said slide-way, certain of said sections having clamping members, means forming an abutment for one of the end sections of said series, and means for moving the section at the opposite end of said series toward or from the other of said sections, substantially as described.

6. A supporting structure having means providing a slide-way, and a series of slidable sections movable within said slide-way, said sections having tongue and groove connection one with the other and with the means forming said slide-way, certain of said sections having clamping members, means forming an abutment for one of the end sections of said series, and means for moving the section at the opposite end of said series toward or from the other of said sections, said latter section having a clamping member thereon co-active with a clamping member on one of said other sections, substantially as described.

7. A work bench including a top having a grooved recess formed in one edge thereof, said recess including elongated grooves providing guide-ways, a block located within the recess and having a portion slidably fitting said guide-ways, means operative from the opposite edge of the bench for moving said block in said recess, said block having its top substantially flush with the top of the bench and being provided with a clamping member thereon, and an adjustable clamping member on said bench oppositely disposed to said other clamping member, substantially as described.

8. A work bench including a top having a recess formed in one edge thereof, a block slidable within said recess and having its upper surface flush with the upper surface of said top, a clamping member on said block and movable into a position above the upper surface of said block, means forming a slideway on said top extending at an angle to said recess, means movable within said latter slideways, a clamping member on said latter means, said latter clamping member being movable into a position oppositely disposed to the clamping member on the block, and means operative from the edge of the bench opposite said recess for moving said block within the recess, substantially as described.

9. The combination of a bench, a vise thereon, a toothed jaw adjustably secured to said vise, and capable of being moved above the upper level of the bench, and a clamping member on said bench oppositely disposed to the toothed jaw on said vise, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELIAS W. HOWELL.

Witnesses:
RHODA E. GILLIES,
CHAS. E. POTTS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."